

U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

Prepared for the  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

**NOTES ON BASE**

This map is one in a series covering the entire surface of Mars at a nominal scale of 1:5,000,000. The series was originally compiled from Mariner 9 data (Bateson and others, 1973). The original shaded relief base was revised and augmented with image data from Viking Orbiter, but feature positions were not shifted to fit controls derived from Viking.

**ADOPTED FIGURE**

The figure of Mars used for the computation of the map projection is an oblate spheroid (flattening of 1/192) with an equatorial radius of 3,393.4 km and a polar radius of 3,375.7 km.

**PROJECTION**

The Mercator, Lambert Conformal Conic, and Polar Stereographic projections are used for this map series. The scale of the series is 1:5,000,000 at the equator. The projections have common scales of 1:4,336,000 at lat ±30° and 1:4,306,000 at lat ±65°. Standard parallels for the Lambert Conformal Conic projection are at lat ±35.8° and ±59.2°. Longitude increases to the west in accordance with astronomical convention for Mars. Latitude is planetographic.

**CONTROL**

Planimetric control of the shaded relief is provided by photogrammetric triangulation using Mariner 9 images (Davies, 1973; Davies and Arthur, 1973) and the radio-tracked position of the Mariner 9 spacecraft. The first meridian passes through the center of a small crater, Airy-O (lat 5.19° S., long 0°), within the crater Airy.

Primary controls used in the network include the Viking Orbiter Secondary Experiment Data Record, radio-occultation measurements from both Mariner 9 and Viking Missions (Lorell and others, 1972; Klore and others, 1973; Lindal and others, 1979), Earth-based radar observations (Pettengill and others, 1971; Downs and others, 1975), and the Mars primary control network of the Rand Corporation (Davies and others, 1978).

**MAPPING TECHNIQUE**

Shaded relief was portrayed by photointerpretive methods described by Inge and Bridges (1976). Uniform sun illumination from the west was used throughout. The original rendition of feature positions, sizes, and shapes was taken from a controlled base mosaic of Mariner 9 images. Various computer enhancements of many Mariner 9 and Viking Orbiter images besides those in the base mosaic were examined in an attempt to portray the surface as accurately as possible.

Initial shaded relief analysis and representation were made by Patricia M. Bridges; revisions were made by Barbara J. Hall.

**COLOR**

No attempt was made on the map to duplicate precisely the color of the martian surface, although the color used may approximate it.

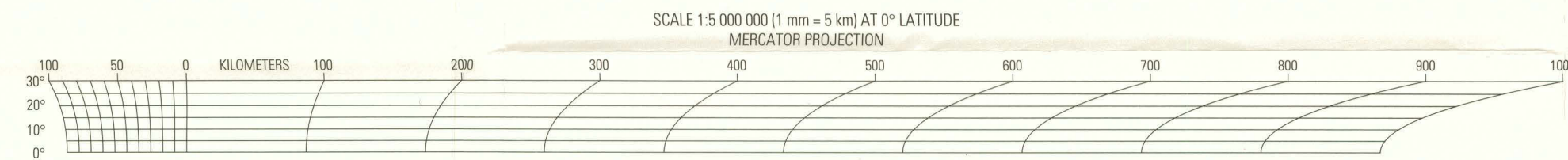
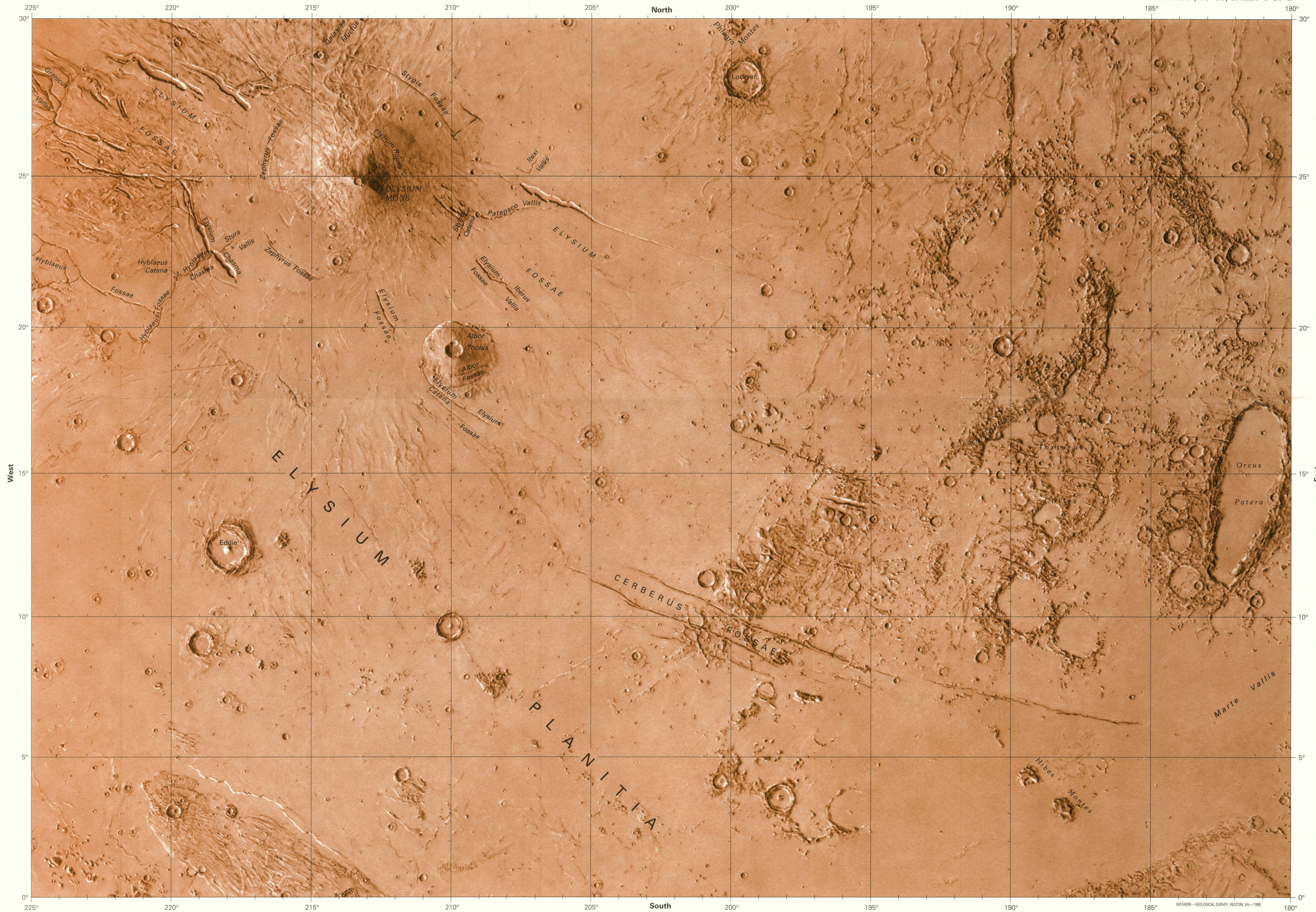
**NOMENCLATURE**

Names on this sheet are approved by the International Astronomical Union (IAU, 1974, 1983, 1986, 1996, 1998).

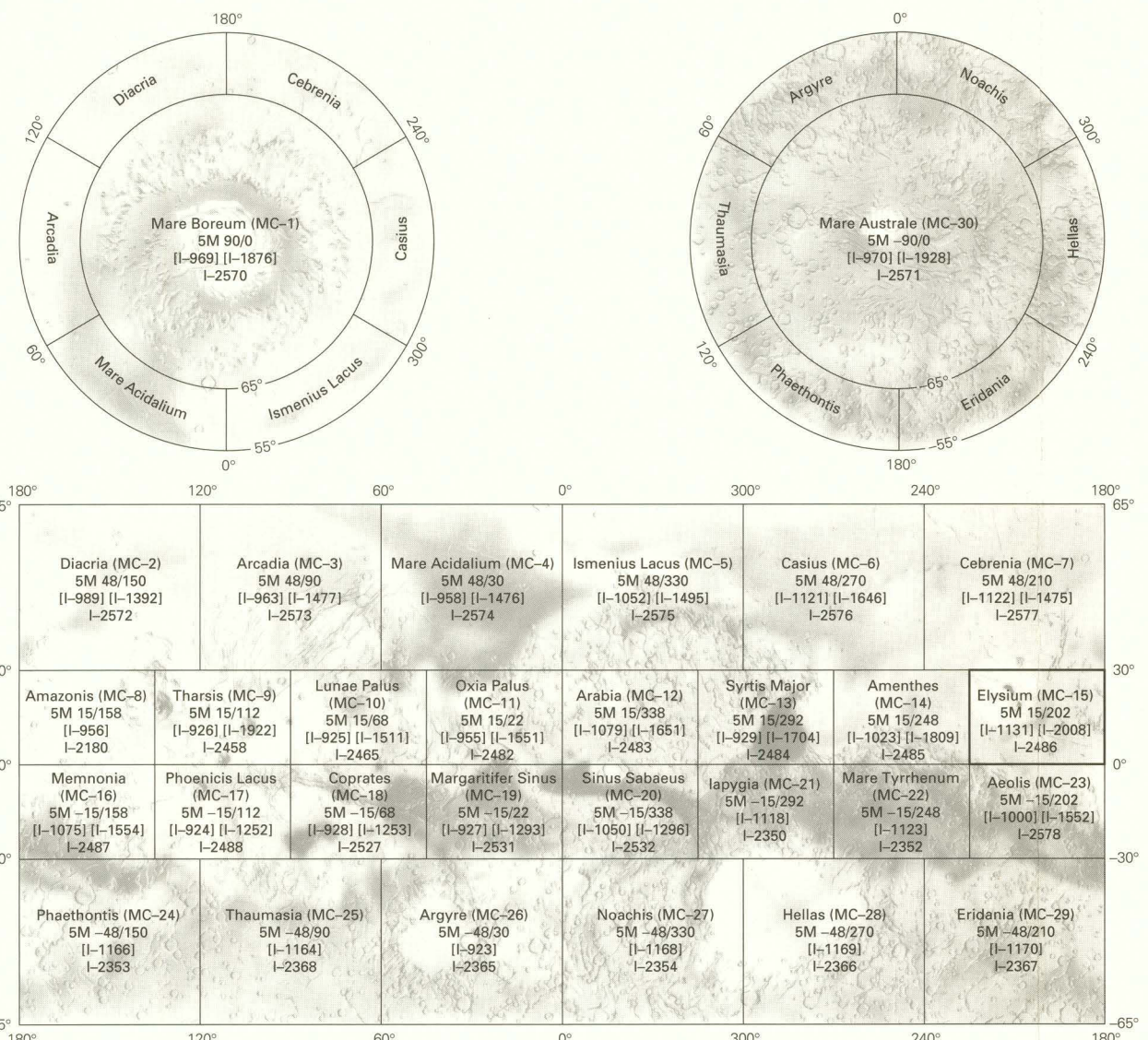
MC-15. Abbreviation for Mars Chart 15.  
M 5M 15/202 RN. Abbreviation for Mars; 1:5,000,000 series; center of sheet, lat 15° N., long 202°; shaded relief map (R) with nomenclature (N).

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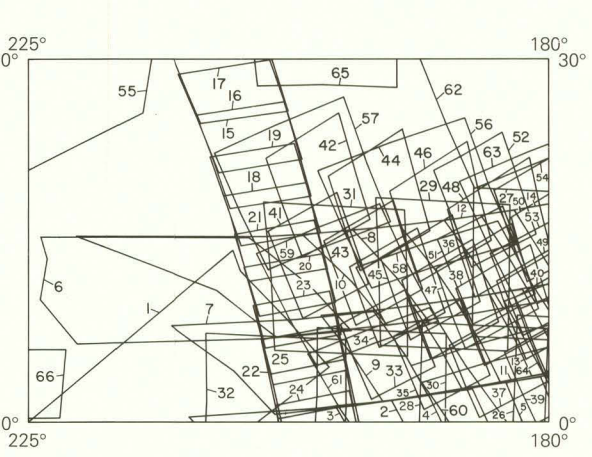
Shaded relief revised in January 1987 on behalf of the Planetary Geology Program, Solar System Exploration Division, Office of Space Science, National Aeronautics and Space Administration  
This map supersedes map I-2008  
Edited by Doris Weir and Derrick D. Hirsch; cartography by Darlene A. Casabier  
Manuscript approved for publication April 18, 1994



**12,000-SCALE CONTROLLED PHOTOMOSAICS**

I-Series Quadrangles

I-1581 MC-15 NW	I-1385 MC-15 NE	I-1384 MC-15 SW	I-1582 MC-15 SE
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**VIKING 1**

Index No.	Picture No.	Index No.	Picture No.	Index No.	Picture No.
1	101A60	18	470A17	35	672A63
2	436A01	19	470A13	36	672A64
3	436A02	20	470A14	37	672A65
4	436A05	21	470A15	38	672A66
5	436A07	22	470A16	39	672A67
6	436A21	23	470A17	40	672A68
7	436A22	24	470A18	41	672A81
8	436A23	25	470A19	42	672A82
9	436A24	26	506A32	43	672A83
10	436A25	27	506A33	44	672A84
11	436A26	28	506A34	45	672A85
12	436A27	29	506A35	46	672A86
13	436A28	30	506A36	47	672A87
14	436A29	31	506A37	48	672A88
15	470A08	32	506A38	49	672A89
16	470A10	33	672A61	50	672A80
17	470A11	34	672A62	51	67A001

**A-camera pictures**

Index No.	DAS No.	Index No.	DAS No.	Index No.	DAS No.
1	7579563	18	7722853	35	7886563
2	7579213	19	7722853	36	7886483
3	7579463	20	7722713	37	7886963
4	7579423	21	7722203	38	5847104
5	5886248	22	9186319	39	7836013
6	8545238	23	7785233	40	7838633
7	7851453	24	7794883	41	7838553
8	7851103	25	7794813	42	7838843
9	7851033	26	7744143	43	7838923
10	7850963	27	7744673	44	7838453
11	7850893	28	7744603	45	7838383
12	7850823	29	7744533	46	7838303
13	781313	30	8270209	47	6607333
14	9128429	31	7867123	48	5794753
15	7722343	32	7866713	49	7851553
16	7722593	33	7866703		
17	7722523	34	7866633		

**QUADRANGLE LOCATION**  
Number preceded by I refers to published shaded relief map.  
(Number in brackets refers to earlier map superseded by revised version.)

**NOTE TO USERS**  
Users noting errors or omissions are urged to indicate them on the map and to forward it to U.S. Geological Survey, Building 4, Room 450, 2255 North Gemini Drive, Flagstaff, Arizona 86001. A replacement copy will be returned.

**REVISED SHADED RELIEF MAP OF THE ELYSIUM QUADRANGLE (MC-15) OF MARS**